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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,017

Applicant(s)

RANGWALLA ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date from parent(3/2/01) and 3/14/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. The disclosure is objected to because of the following informalities: Page 1 needs a statement concerning parent case(s). The examiner notes that while the transmitted of August 12, 2003 indicates that the case is a continuation of 09/725,471, nowhere else in the electronic file is there any information concerning the parent case being a divisional of 09/434,380.

Appropriate correction is required.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 16-25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,610,376. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of this application are broader with indefinite claim limitations (see below) that were amended in the parent application to provide allowable subject matter, and as such totally encompass the claims of the parent.

4. Claims 1-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,426,507. Although the conflicting claims are not identical, they are not patentably distinct from each other because the apparatus claims of this application are the original ones rejected in the grandparent case 09/434,380, where the equivalent of claims 2 or 13 were amended into the independent claims to overcome rejection therein, and as such contain all limitations of the patented claims, but with broader independent claims totally encompassed by the patent's claims.

5. Claims 1-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 54-61 of copending Application No. 10/153,622. Although the conflicting claims are not identical, they are not patentably distinct from each other because while claimed in different orders with limitations from dependent claims inserted in the independent claims, and the vacuum pump that would be required for the claimed evacuated vessel explicitly recited, the limitations of 10/153,622 are all in essence present in the claims of the present case, hence these are obvious variations.

6. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of relative terms that lack clear metes and bounds is vague and indefinite, unless clear scope or definition is provided in the claim or by a definitive statement in the specification or cited, relevant

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prior art. In claims 1-15, see "smaller" in the preamble the independent claims. Smaller size than what? The claims provide no baseline for comparison. Similarly "higher efficiency" then what? As this phrasing is in the preambles, it might be considered that the relative terms provide no "life" to the limitations in the body of the claim, however "chemical reaction" could be said to tie the preamble to the body, thus clarity would be important.

The steps of the claims (except for 19 and 24) are not commensurate in scope with the preambles of the independent claims, because they never require any chemical reaction to ever take place.

In the "operating a foil support..." limitation, it is noted that since "the first voltage" and "the second voltage" are not locations, it is technically impossible for the particles to travel from one voltage to another. For purposes of examination, the examiner will assume travel from the generating assembly to the foil support assembly.

It is uncertain if the evacuated vessel of claim 18, represents the chamber of the processing assembly, which the generating assembly could be in, or if its suppose to be the generating assembly housing.

7. Claims 1, 3-11 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuetz et al in Kristianson.

Claims 12, 14-15 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colvin et al, in view of Kristianson.

Schuetz et al (col. 9, line 55- col. 10, line 41 and Fig. 8, Ti alloy foil window 0.005-0.0015 inches = 12.7 to 38.1 μm ; col. 11, lines 30-68), or Colvin et al (Figures 1-2; abstract; col. 1, lines 34-58; col. 3, lines 70- col. 4, line 5, and lines 34-45 and 70-75, for tungsten filament, A1 foil anode/window, exemplified as 0.001 inch = 25.4 μm thick), teach electron beam generators having filaments to produce the electron (particles) and metal foil windows that act as anodes to accelerate the electrons towards them, and have thickness very near those claimed. It would have been obvious to one of ordinary skill in the

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art, that there is not a significant difference between .0005 inch equals about 12.7 μm and 10 μm ; nor between 0.001 inch \approx 25.4 μm , and 20 μm , as the values are on the same order of magnitude, with differences appearing to partly come from using rounded numbers in different unit systems, and because the variation is within routine optimization ranges.

These primary references and applicants' claims differ by not giving the claimed voltage of the filament. It is noted that for acceleration to occur as taught, the potential difference between filament and foil will inherently have the relative relationship claimed.

Also, neither Colvin et al nor Schuetz et al discuss gas usage, operating volume, or applicant's formula. It would have been obvious for one of ordinary skill in the art to optimize the particle beam yield for reasons of economics and efficiency, but without all the specific variables, values produced by the formula cannot be directly compared, but appear to represent a way of showing optimization. Depending on what the intended meaning of the evacuated vassal is, that meaning will effect what volume it encompasses, and will also be influenced by intended enduse of the electron beam, i.e. larger substrates take up more space, so that the operating volume will be optimized accordingly.

Kristianson (abstract; figures; and col. 3, lines 5-32) is cited for its teaching of using an electron beam generated from analogous anode and cathode configurations that use a potential difference between them of 10 to 100 K volts for performing chemical reaction (sterilization) on substrates in gases such as H_2O_2 (which is not oxygen gas). For performing such chemical operations, it would have been obvious to one of ordinary skill in the art to use energies known for producing that effect, hence motivating use of such energies and chemical agents in the primary references' apparatus.

With respect to the apparatus claims, note that different phrasing was used therein which better defined the structure; and also that energies in the form of operating voltages need only be capable of being produced, but need not actually used in claimed fashion, with the end result, chemical reaction

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being a method limitation that does not limit the apparatus structure. In other words, use of the device for a specific purpose, cannot in its self confer patentability to the device.

8. Claims 9, 19 and 24 are alternately rejected under 35 U.S.C. 103(a) as being unpatentable over Schuetz et al or Colvin et al, in view of Kristianson as applied to claims 1, 3-12 & 14-25 above as appropriate, and further in view of Novotny et al.

Again, note the use of specific reactants is a method limitation, not necessarily limiting the apparatus structure.

Alternately, if performing curing operations as suggested in the backgrounds of the primary references, one of ordinary skill in the art would realize from the teaching of Novotny et al, that many curing reactions are inhibited by oxygen, thus use gases to exclude the presence O₂ (abstract; col. 13, lines 16-25). As Novotny et al's e-beam apparatus is consistent with the primary references, suggesting the use of either Al as Ti foil windows, the use of such gases to enable such processes would have been obvious to one of ordinary skill in the arts, due to the demonstrated advantages of such gases for taught uses.

9. While the publication to Lutz, discloses use of an electron beam (EB) that appears to read on independent claim 16 (paragraphs [0097-0099] and [0107]), Lutz is not prior art and it is a CIP of its parent cases, which cure using UV and/or visible, but do not discuss EB. Other art of interest include Kreil et al (Ti), Takayama et al (Ti or Al, 10-30 μ m) and Wenz et al (Ti), who discuss window foils of interest, but at best discuss acceleration voltages and not that supplied to the filament/generating device.

In the IDS of March 14, 2003 from the parent case, Edlein et al's the paragraph bridging col. 11-12 is noted to discuss use of e-beam apparatus with low voltages of interest to the present invention, where the window material is noted to be important to use of lower velocities (60-100 KeV), but no details therefore are given. The given company name, Applied Advanced Technology, appears to relate this disclosure to the Avnery patents US 5,962,995 (cited in the March 2, 2001 IDS, see claims 1, 12-13 and 19-23), US 6,545,398 B1 (see col. 7, lines 40-67) and WO 00/34958. While these patents teach Ti

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foils of about $\leq 12 \mu\text{m}$ and alternately A1 foils, overlapping these limitations of applicants, they do not appear to use the same voltage applications, configurations or arrangements as the present claims. Note ('995)'s claim where the 100-1500 KV is between the housing and the windows, instead of applicant's ≤ 110 KV for the generating assembly, and a second higher voltage on the window foil.

Nablo et al (4,246,297) was cited by applicant but issue fee of the present was paid, hence the reference was not reviewed at that time. While it teaches e-beam curing a chemical reaction using process, with dose and energy controlled to protect the substrate from degradation, it provides no apparatus structure as claimed. In col. 3, lines 30-37, 3 patents are listed as providing apparatus of the type used for Nablo et al's taught controls, however only Quintal (3,702,412) was found to discuss any window structure, besides shape. In Quintal ('412), col. 2, lines 23-30 discuss an A1 window, but not thickness. While various voltage potentials were given in col. 2, lines 54-68, none appear to be applicable to the claimed "particle generating ... in a range of 110 Kvolts or less".

Weiss et al (2003/0094582 A1) is cited as of interest for A1 window teachings ([0022], [0038], [0042], [0046], [0051-52], and [0073]), but appear to employ higher energies ('751 KV) or 125 KV) than claimed.

10. Any inquiry concerning this communication from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can generally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck, can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available

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through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.L. Padgett/dh
April 27, 2004
May 7, 2004



MARIANNE PADGETT
PRIMARY EXAMINER